

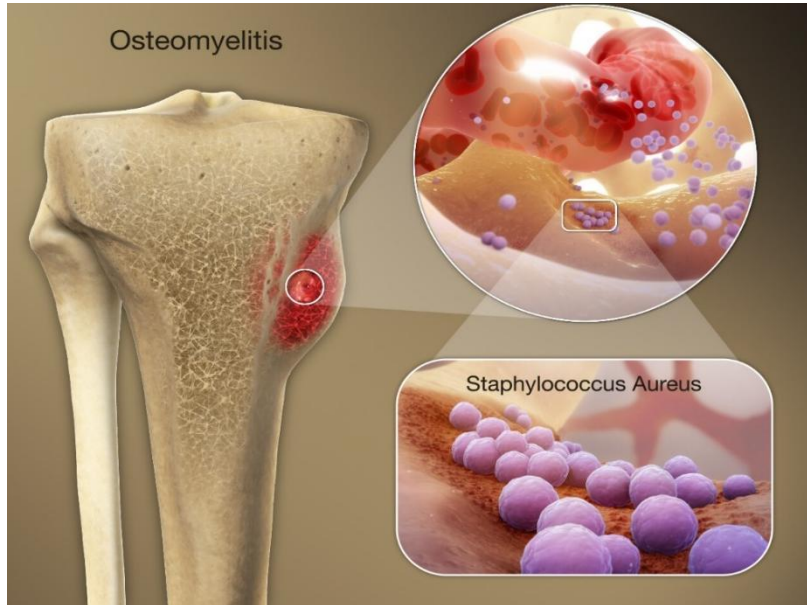
Integrated Teaching on Osteomyelitis

- ☐ Department of
Microbiology
- ☐ Department of
Orthopedics

Osteomyelitis(Topics)

- Etiopathogenesis
- Site of involvement
 - Diagnosis
 - Management
- Complication & its management

Etiopathogenesis of Osteomyelitis (OM)



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Osteomyelitis

- Osteomyelitis (OM) is defined as the **inflammation of bone and bone marrow** due to infection.
- Usually it is primary infection or can also be secondary to systemic infection.
- May be acute or chronic, pyogenic or non pyogenic.
- May be localized, or spread from bone to marrow, cortex, periosteum, and soft tissue surrounding the bone.

Etiology

- Certain bacterias & fungi are the causative organisms of osteomyelitis (OM).
- **Staphylococcus aureus (MRSA, MSSA)** is the **predominant** organism of **pyogenic OM** (80-90% cases), Group B Streptococcus in **neonates**.
- **Mycobacterium tuberculosis** is prevalent in **non-pyogenic OM**(Pott's Disease).
- Klebsiella, Pseudomonas, Neisseria gonorrhoeae, Haemophilus etc. are also found.
- Fungal causes are not common.

Condition/Clinical Context	Pathogen Causing Osteomyelitis
Most Common Cause	<i>Staphylococcus aureus</i>
Sexually Active Individual	<i>Neisseria gonorrhoeae</i>
Sickle Cell Anemia	<i>Salmonella</i> species
Diabetics/IV Drug Users/Puncture Wounds	<i>Pseudomonas aeruginosa</i>
Dog/Cat Bites	<i>Pasturella</i>
Pott Disease (Osteomyelitis Of Vertebrae)	<i>Mycobacterium tuberculosis</i>
Prosthetic Joints	<i>Staphylococcus aureus</i> & <i>Staphylococcus epidermidis</i>

Routes of entry: Osteomyelitis

Haematogenous

spread: An infection in another part of the body, e.g- urinary tract or lungs, can spread to the bone through the blood

Contiguous spread:

From surrounding soft tissue infection, **e.g- ulcer & diabetic foot** as a result of **PVD and neuropathy**

Direct inoculation

Infected prosthetic joints:

Metal rods or plates placed in the bone during surgery

Presence of foreign body in the bone:

Bullet, pellet, blast splinter, rod, throne, wood etc

Contaminated wounds:

Bacteria from the skin can enter the bone through a wound during penetrating injury or surgery

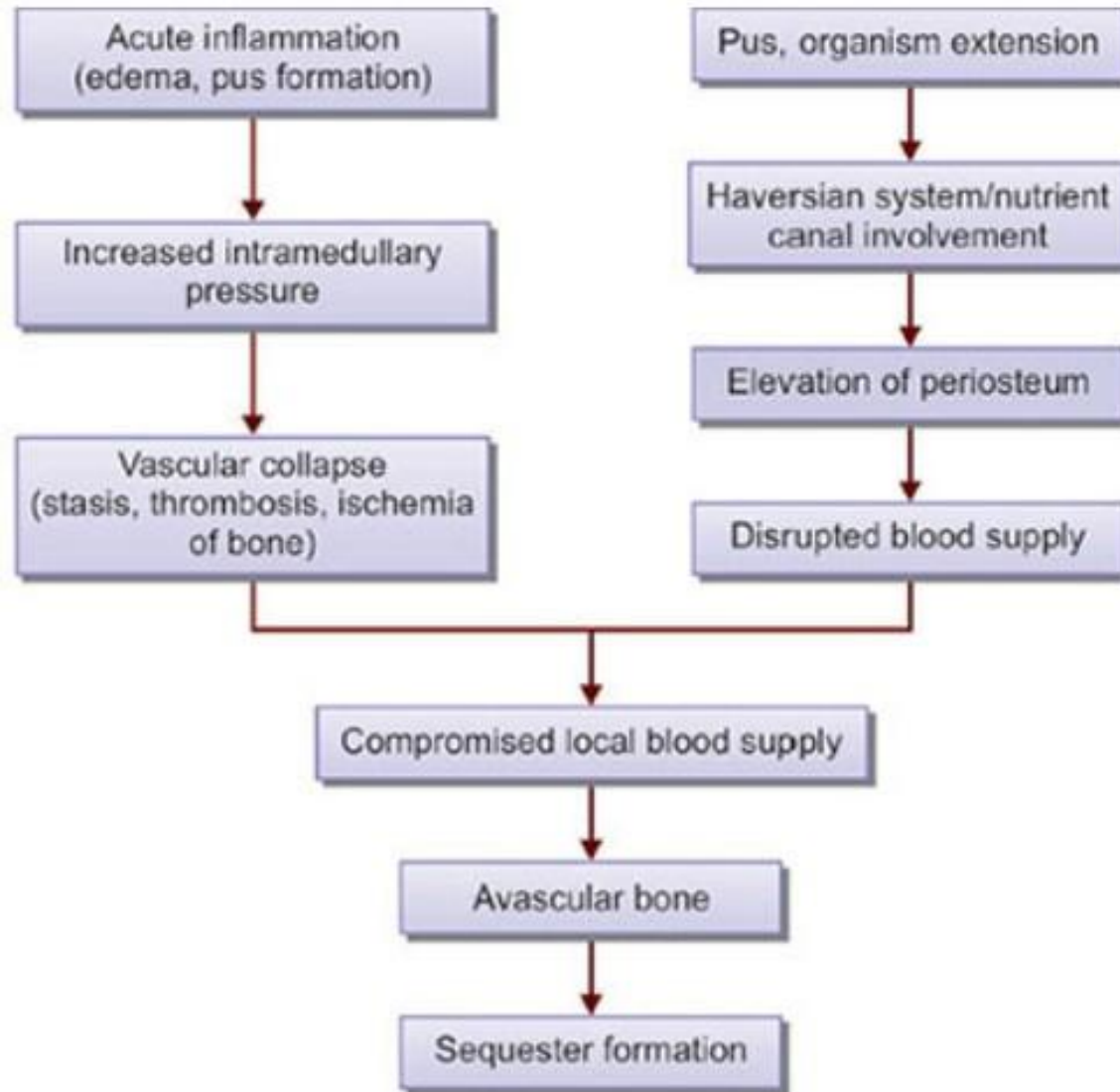
Risk Factors

- **Compromised Immune System:** Diabetes, HIV/AIDS, cancer, or cancer treatments, and malnutrition can weaken the immune system, making it harder to fight off infections, including osteomyelitis.
- **Diabetes:** Poorly controlled diabetes can impair blood flow and wound healing, increasing the risk of infection, especially in the feet.
- **Poor Blood Circulation:** Conditions like peripheral artery disease or sickle cell disease can reduce blood flow to the bones, making them more susceptible to infection.

- **Injuries and Trauma:** Open fractures, puncture wounds, and severe injuries can expose bones to bacteria, increasing the risk of osteomyelitis.
- **Surgery:** Bone surgery, especially if it involves implants or internal fixation of fractures, can introduce bacteria into the bone and increase the risk of infection.
- **Infections:** Pre-existing infections, especially those that spread through the bloodstream, can reach the bones and cause osteomyelitis.
- **Sickle Cell Disease:** This inherited condition affects red blood cells and can increase the risk of osteomyelitis, particularly in children.

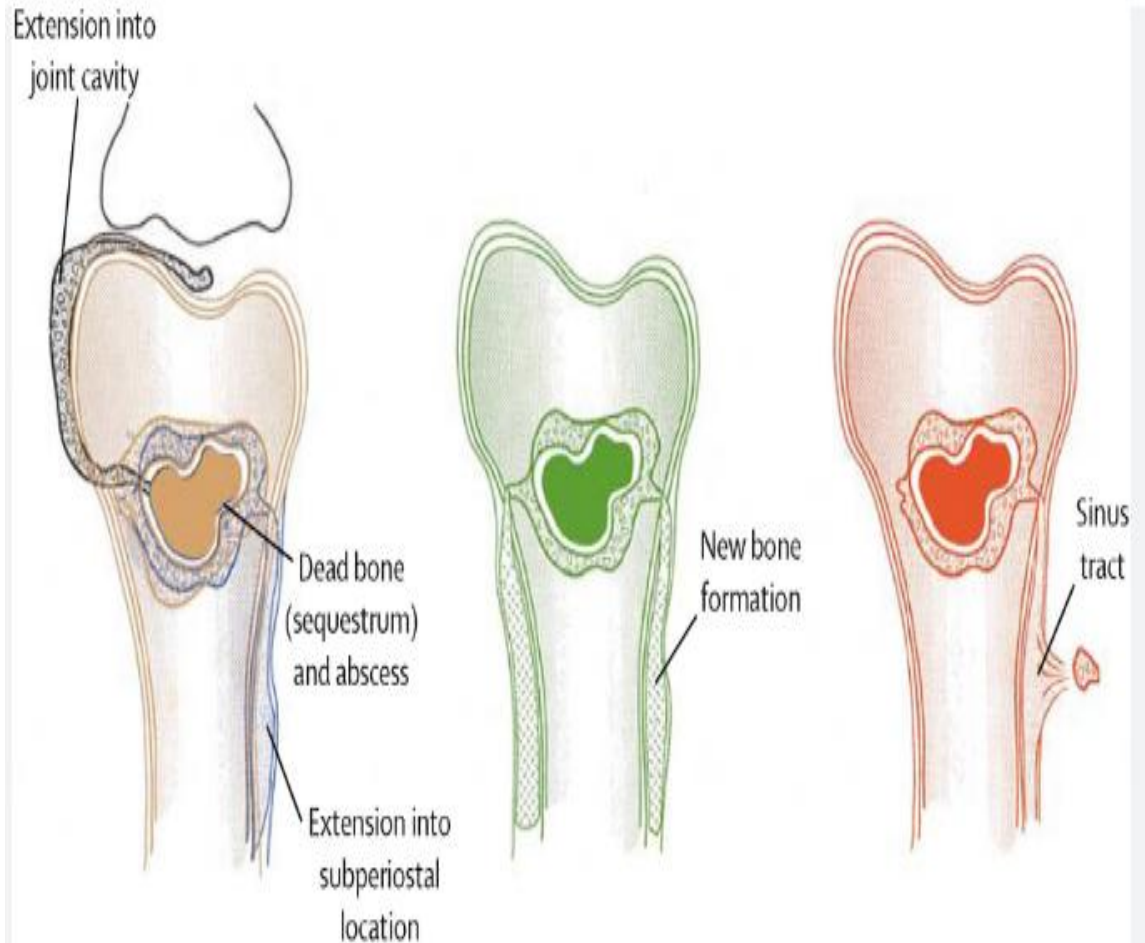
- **Intravenous Drug Use:** Sharing needles or using contaminated needles for intravenous drug use can directly introduce bacteria into the bloodstream and lead to osteomyelitis.
- **Pressure Injuries (Bedsores):** Prolonged pressure on the skin can lead to sores that can become infected, potentially spreading to the underlying bone.
- **Age:** While anyone can get osteomyelitis, it's more common in children and older adults.
- **Prosthetic Joints:** People with prosthetic joints are at higher risk of developing osteomyelitis around the implant.

Pathogenesis



Stages of OM

Inflammation
Suppuration
Sequestrum
Involucrum



Thank
You